Faculty members are required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT. CHEM  COURSE NUMBER: 1150

NUMBER OF CREDITS: 4  Lecture: 3  Lab: 1

Course Title:
Survey of Chemistry

Catalog Description:
Introduces key concepts of general, organic, and biological chemistry including measurement, matter, nomenclature, chemical quantities, chemical reactions, solutions, acids and bases, organic compound families and reactions, and macromolecules of biological importance such as carbohydrates, lipids, proteins, and nucleic acids. This course is for pre-health, medical science, and liberal arts students, and no recent background in chemistry is required. This course includes a lab.
Prerequisite: High school algebra or MATH 009.

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)
Goal 1: Communication: ___ by meeting the following competencies:
Goal 2: Critical Thinking: ___ by meeting the following competencies:
Goal 3: Natural Sciences: ___ by meeting the following competencies:

- Demonstrate understanding of scientific theories.
- Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
- Communicate their experimental findings, analyses, and interpretations both orally and in writing.
- Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

Goal 4: Mathematics/Logical Reasoning: ___ by meeting the following competencies:
Goal 5: History and the Social and Behavioral Sciences: ___ by meeting the following competencies:
Goal 6: The Humanities and Fine Arts: ___ by meeting the following competencies:
Goal 7: Human Diversity: ___ by meeting the following competencies:
Goal 8: Global Perspective: ___ by meeting the following competencies:
Goal 9: Ethical and Civic Responsibility: ____ by meeting the following competencies:
Goal 10: People and the Environment: ____ by meeting the following competencies:

**Prerequisites or Necessary Entry Skills/Knowledge:**
High school algebra or MATH 0099

<table>
<thead>
<tr>
<th>Topics to be Covered (General)</th>
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<tbody>
<tr>
<td>Chemistry and measurements</td>
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<td>Matter and energy</td>
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<td>Atoms and elements</td>
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<td>Nuclear chemistry</td>
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<td>Ionic and molecular compounds</td>
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<td>Chemical quantities and reactions</td>
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<td>Gases</td>
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<td>Solutions</td>
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<td>Organic chemistry and functional groups</td>
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<td>Biomolecules</td>
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**Student Learning Outcomes**
- Identify and convert between various units of measurement including metric and SI systems.
- Write in the language of chemistry, including chemical formulas, names of elements and compounds, and chemical equations.
- Demonstrate the relationship between moles, molar mass, and particles by using conversion factors to correctly solve chemistry problems associated with the above terms.
- Describe the structure of atoms.
- Describe the structure of compounds and intermolecular forces.
- Balance chemical equations and calculate chemical quantities utilizing stoichiometry.
- Classify chemical reactions, states of matter, and mixtures.
- Identify radiochemical processes and medical applications of radioactivity.
- Define and identify acids and bases.
- Apply gas laws by solving problems.
- Identify functional groups, organic reactions, and various classes of biomolecules.

**Is this course part of a transfer pathway:** Yes [ ] No [X]  
Revised 01/20